

WHAT IS CLAIMED IS:

Sub
a1

1. In a surgical method comprising making an incision through the thoracic wall of a patient, and performing a surgical procedure proximate the surface of the heart, the improvement comprising immobilizing a portion of the surface of the heart upon which surgery is to be performed by temporarily securing to the surface of the heart a cardiac immobilizing member that at least partially surrounds the portion of the surface of the heart upon which the surgery is to be performed ~~thereby AND substantially~~ fixing the position of the cardiac immobilizing device.

10

2/14/96

2. The method of Claim 1 wherein the step of securing the cardiac immobilizing member to the heart comprises applying a layer of physiologically compatible adhesive between the cardiac immobilizing member and the surface tissue of the heart.

15

3. In a surgical method comprising making an incision through the thoracic wall of a patient, and performing a surgical procedure proximate the surface of the heart, the improvement comprising immobilizing a portion of the surface of the heart upon which surgery is to be performed by placing a cardiac immobilizing member that defines at least one partial chamber in substantially fluid tight sealed relationship with the surface of the heart at least partially surrounding the portion of the surface of the heart upon which the surgery is to be performed to define at least one vacuum chamber and partially evacuating said vacuum chamber to secure the cardiac immobilizing device in sealed relationship to the heart and fixing the position of the cardiac immobilizing device.

20

25 Sub a2

4. The method of Claim 3 the incision through the thoracic wall is not substantially longer than the minor dimension of the cardiac immobilizing member.

30

5. Apparatus for immobilizing a surface portion of the heart of a patient to enable a surgical procedure to be performed on the heart while the heart is beating comprising:

5 a cardiac immobilizing member comprising structure defining a partial chamber having edges, the edges being so constructed and configured to form a substantially fluid-tight seal with the surface of the heart, said member being so constructed and configured to at least partially surround that portion of the heart upon which the surgical procedure is to be performed and when in sealed relationship with the heart to define with the heart a vacuum chamber;

10 means for partially evacuating the vacuum chamber for securing said cardiac immobilizing member to the heart; and

15 means for fixing the position of the cardiac immobilizing member; said cardiac immobilizing member, evacuating means and fixing means being so constructed and configured as to be attachable to the heart by reason of a partial vacuum in the partial chamber defined by the cardiac immobilizing member and substantially immobilizing that portion of the heart surface at least partially surrounded by the cardiac immobilizing member.

20 6. The apparatus of Claim 5 wherein the cardiac immobilizing member generally defines an annulus.

25 7. The apparatus of Claim 6 wherein the cardiac immobilizing member has a minor diameter and a major diameter and the minor diameter is about one inch and the major diameter is about one and one-half inches.

30 8. The apparatus of Claim 5 wherein the cardiac immobilizing member comprises walls at least partially formed of soft resiliently deformable polymeric material.

9. The apparatus of Claim 5 wherein the cardiac immobilizing member defines a plurality of chambers.

10. The apparatus of Claim 9 wherein the cardiac

immobilizing member comprises walls at least partially formed of soft cushion seal resiliently deformable polymeric material.

Spec A3

5

10

15

20

25

11. Apparatus for immobilizing a surface portion of the heart of a patient to enable a surgical procedure to be performed on the heart while the heart is beating comprising:

a cardiac immobilizing member comprising structure defining an elongate surface configured and constructed to lie in intimate contact with the surface of the heart of the patient and being so constructed and configured to at least partially surround that portion of the heart upon which the surgical procedure is to be performed;

a layer of physiologically compatible adhesive for bonding the elongate surface temporarily to the surface tissue of the heart; and

means for fixing the position of the cardiac immobilizing member; said cardiac immobilizing member, ~~evacuating means~~ and fixing ~~means~~ 2114196 means being so constructed and configured as to be attachable to the heart by the adhesive thereby substantially immobilizing that portion of the heart surface at least partially surrounded by the cardiac immobilizing member.

12. The apparatus of Claim 11 wherein the cardiac immobilizing member generally defines an annulus.

13. The apparatus of Claim 11 wherein the cardiac immobilizing member has a minor diameter and a major diameter and the minor diameter is about one inch and the major diameter is about one and one-half inches.

14. The apparatus of Claim 11 wherein the cardiac immobilizing member at least partially comprises resiliently deformable polymeric material.